MYRMECIA

News Bulletin of the Australian Entomological Society Inc.
Volume 36, Part 2, May 2000
Australia Post Print Post Publication PP242296/00144. Price $5
ISSN 1323-6032

AUST. ENTOMOL. SOC. EXECUTIVE ADDRESS
Aust. Entomol. Soc. Executive
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THE COVER

The cover depicts a species of *Riptortus* in the family Alydidae.
It is one of the prize winning entries at the competition at the AES Annual meeting in Canberra.
The editor will be pleased to learn the name of the artistand to give suitable acknowledgements in the next issue!

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NOTICE

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AUSTRALIAN ENTOMOLOGICAL SOCIETY - 31ST AGM & SCIENTIFIC CONFERENCE. 25-30 June 2000 Northern Territory University, Darwin

Insects in the Monsoonal tropics

You are all invited to attend the AES AGM and scientific conference which this year are to be held in Darwin. This will coincides with Darwin's fantastic dry season, so please come, to meet with colleagues, to hear their latest research findings, and to experience the NT lifestyle.

The conference website can be found at:
http://www.nt.gov.au/dpif/news_events/aesc.shtml

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COPY DEADLINE FOR NEXT ISSUE

Material for publication in the August 2000 issue of *Myrmecia* will need to be in the hands of the Editor by **Friday 21 July 2000**. All material should arrive by e-mail to laurence@ento.csiro.au; if this is not possible, fax to 02 6246 4264.

EDITORIAL

Well. It happened! It seems that there are entomologists out there who read this Bulletin!! Three readers telephoned with comments on the last issue of *Myrmecia*, and in this issue we include what are, in effect, two unsolicited letters to the editor. No less a body than our'Core Executive' itself, meeting in full majesty at UQ as reported further below, gave every impression of having looked into *Myrmecia*. Not quite a flying start, but at least a start.

The past three months have seen some good things for the entomological community in Australia, and some things that not everyone can be enthusiastic about. The editors received unpublishable comments about the effects of the financial challenges facing CSIRO Entomology, but the Chief's circular to all staff put the financial position clearly. In the coming triennium, additional expenditure is expected to rise by 2.7 million dollars, but additional income by only 0.7 million. That is quite a housekeeping problem for any management, particularly in view of the situation, so common in public service, that CSIRO receives no supplementation for staff salary increases and promotions costs. At the same time, science and the way we organise it must react to the changing needs of society. That is, new fields of enquiry must be opened up, even though this involves hard decisions on the withdrawal of appropriation funding from some pre-existing fields. Much of my own career was spent under an earlier paradigm, when academics and government servants expected lifetime tenure of their positions, but Mrs Thatcher's administration taught me different survival skills. And if you think there is any possibility of returning to earlier halcyon days, just consider how politicians vie with each other at each election to promise the Australian voters reduced taxation by reducing public expenditure. Samuel Johnson, writing at the time he prepared his dictionary some 250 years ago expressed the problem for academics in his usual pungent language:

'Yet think what ills the scholar's life assail
Pride, envy, want, the Patron and the jail.'

For much of this century, our Patron as scientists has been the State. But as voters we seem decreasingly interested in that responsibility, and the State may be reflecting (or is it creating?) public opinion that science should be profitable and supported by those who make the profit. Our own reaction as entomologists must be to impress continually, on as wide a range of society as possible, from children to politicians and publicans, evidence for the value of scientific activities. As one of you wrote just recently, perhaps those people in FASTS really are relevant to us and our future.

This issue of *Myrmecia* is a little thinner. Murray Fletcher, as I write this, is unwell and unable to tell us what has been happening in NSW. Moreover, we lack pictures. And we lack reports on scientific meetings, including some outstanding ones in Australia and New Zealand. Please do not be shy! If you attend a good meeting, send us an e-mail asking if we would like a report on what you found interesting and so make it of use to other members of AES.

Editors

A. E. S. 31st AGM and SCIENTIFIC CONFERENCE

Insects in the Monsoonal Tropics

This year, for the first time ever, the Annual General Meeting and Conference of the Australian Entomological Society will be held in Darwin in the Northern Territory. Come to Darwin in June when the weather is cool (17 – 30° C) and dry, and the sunshine is guaranteed. See what attracts thousands of tourists here every southern winter. Most of them aren't even interested in the great insect collecting to be had at the end of the wet season.

The close proximity to Asia has helped make Darwin one of the most cosmopolitan cities in Australia, with over 50 ethnic groups choosing to call it home. The Conference will be held at the NT University campus, Casuarina, just 20 minutes from the Darwin CBD (free shuttle bus service provided). The social settings and field excursion sites will be exciting and different, and will give a taste of the unique character of this part of Australia. You could even use the trip to see places like the World Heritage listed Kakadu wetlands and Aboriginal art sites, and the magnificent Katherine Gorge. And you can see it all before the new goods and service tax in July.

There will be a Ministerial Welcome Reception at Parliament House, and a Conference Gala Dinner under the stars by the water's edge at Fannie Bay. There are two optional conference field trips: to Litchfield National Park with waterfalls and swimming, and to the award-winning Territory Wildlife Park. If you have more time there are plenty

of things to do and places to explore in the Darwin area: historical sites, harbour cruises, fishing tours, night markets, museums, botanical gardens, beaches, crocodile farms. There is something for everyone. At this time of year the city's nightlife is thriving with the many restaurants, cafes, pubs and clubs full to overflowing with the annual influx of tourists.

For those with more time there are the famous Top End National Parks slightly further afield. There is a wide variety of tours available, or the more adventurous can hire cars or fully equipped campervans. The large and scenically diverse Kakadu National Park (its even got a uranium mine!) is only a few hours drive from Darwin, as are the beautiful Litchfield and Katherine Gorge National Parks.

Papers are invited for both oral and poster presentation at the Conference, to be held from 25th to 30th June 2000. Registrations are invited and urged to be early to guarantee a place in the sun. There are incentives for early registration. Registration forms are on the website: www.nt.gov/dpif/news_events/aesc.shtml. Symposium topics include pest management, social insects, quarantine, biodiversity and conservation, insect vectors of disease, and biocontrol. In addition, papers will be accepted on any other entomological topic. See you in June.

Martin SHIVAS
Regional Councillor

CONGRATULATIONS

Dick Drew of Griffith University was one of five distinguished Australian scientists to be receive a Clunies Ross National Science and Technology Award on 29 March 2000, from Steve Bracks, Premier of Victoria and Mr Hugh Morgan, Chairman of the Ian Clunies Ross Memorial Foundation. The award referred to the use of "coloured balls to catch fruit flies, thus protecting Australia and South East Asian horticulture industries". The press release, citations and photos are available online at: www.cluniesross.org.au

LIFE AT THE *Metarhizium* FRONT

BioCare Pty. Ltd launched its new biological insecticide BioCaneTM on 2nd May in Bundaberg at the Australian Sugarcane Technologists Conference. This has been developed for use against greyback canegrub, *Dermolepida albohirtum*, one of Australia's most destructive cane pests. The active ingredient, the spores of FI-1045 a strain of *Metarhizium anisopliae* var. *anisopliae*, is derived from a naturally infected grub collected near Tully, Queensland. BioCaneTM consists of small rice granules on which the fungus has been grown to produced over 2 x 10^9 spores/g. It is minimally formulated to ensure good flow-ability though granule applicators. It is recommended for application to recently planted sugarcane at the 'fill-in' stage, usually from June to November, at the rate of 33Kg per ha and covered with soil immediately so as to minimise loss of viability due to UV, dessication and high temperatures. Field trials undertaken over the past 3 years by BSES in collaboration with CSIRO and funded by SRDC have shown a consistent 50-60% reduction in the number of canegrubs in treated plots and a significant increase in sugar yield. The inoculum will persist for at least 3 years, and is augmented by new spores from disease-killed grubs. Thus control should last for several years from a single application. It is expected to find ready acceptance in the Burdekin where growers have experienced difficulty with chemical control of grubs due to the alkaline soil.

The first operational use of *Metarhizium* against locusts has also taken place recently following the granting of a "minor use permit" by the NRA for Green GuardTM. This is an oil-based suspension of spores of *M. anisopliae* var. *acridum* for control of locusts and grasshoppers. Some 15 square kilometres of pasture in the north Flinders ranges were sprayed by the APLC during April for control of the Australian plague locust on organic beef farms. The recommended rate has been progressively reduced following successful field trials, so much of this area was treated with 25g of spores/ha in 500 ml of oil applied using fixed wing aircraft fitted with Micronair nozzles. Caged insects showed that the fungus gave up to 95% control in the areas sprayed. CSIRO has licenced SGB Pty Ltd of Albury Wodonga to produced Green GuardTM and steps are now being taken to apply for full registration from the NRA.

Richard MILNER
CSIRO Entomology

DRAGONFLIES Soar to New Heights

The following is from a press release received this month:

A well known, but so far little regarded group of insects in Australia, really took off for the first time in April when Deniss Reeves was unanimously elected as the inaugural president of the Australian Dragonfly Society.

As part of Queensland's new state-wide NatureSearch program, an enthusiastic group of budding odonatists gathered at the the Moggill Centre

of the Queensland Parks and Wildlife Service to soak up the long years of knowledge and superb slide presentations of these stunningly colourful and seasonally active insects presented by two of their most devoted fans. Considerable weight was added to the occasion by the presence of NatureSearch consultant and former Minister for Environment and Heritage Pat Comben, Wildlife Preservation Society of Queensland's president Adrian Caneris and Marie Carmody, lecturer in Environmental Sciences at the Moreton Institute of TAFE.

Retired pharmacist and author of Dragonflies and Damselflies in the phenomenally successful WILDLIFE of GREATER BRISBANE, Mr Reeves was ably supported by the Manager of NatureSearch, Ric Nattrass who had arranged the historical meeting and which later led to the establishment of the first national society for this important group of ancient insects.

After a brief journey into the intricacies of wing veins and body parts, essential to the identification of dragonflies, Mr Nattrass handed the meeting over to the detailed commentary and breath-taking photography of Mr Reeves which has placed him in the forefront of this field for more than thirty years.

Participants were then invited to put the theory into practice by following keys to identification taken from "The Australian Dragonflies" by Watson, Theischinger and Abbey. Butterfly nets were professionally swished around the Moggill Centre by supporting zoologists Dr David Stewart and Mr Harry Hines and the resulting dragonflies, together with some preserved specimens, provided identification challenges for the newly initiated. "It was a real sense of joy", said the newly elected president "as their faces lit up when their identifications proved correct, almost without exception".

"In 'The Australian Dragonflies', we have one of the best reference works of any insect group in Australia, but despite this our dragonflies and damselflies have been held back for lack of useable common names," said Mr Reeves. "It is very difficult to get the community enthusiastic about a common, brilliant ruby-red dragonfly that is known only as *Orthetrum villosovittatum*" he said. "Seven or eight years ago, Ric Nattrass was talking about Ruby Spindletails, Black-tipped Powderblues and Golden Mottlewings and while I'd be cautious about firm proposals without a reasonable consultative process, I think he's very much on the right track."

Dragonflies are very obvious in the warmer months, especially around bodies of water and it is true that almost all of them have only scientific names to identify them by, at the moment. However, judging from the enthusiasm of the Moggill meeting, their relative obscurity is likely to be a thing of the past. Overseas, especially in Europe, the Americas and Japan, dragonflies and damselflies have an enormous professional and community following. Most have common names and very active societies concerned for their survival.

There are three immediate aims of the newly established Australian Dragonfly Society, said Mr Reeves. The first is to establish an ethics committee which will include ordinary members of the community and which will ensure that the society's conduct is acceptable to the broader community. The second is to establish a naming committee which will consult widely to publish common names to promote general interest in dragonflies. And thirdly I hope that the field efforts of society members will support the aims of NatureSearch in Queensland and other state conservation authorities to develop a better understanding of the conservation status of Australia's Odonata.

The Australian Dragonfly Society
c/-Deniss M.Reeves
30 Bramston Terrace
Herston QLD 4006

Does Australia need Bumblebees?

It is hard to believe that Australia is contemplating the deliberate introduction of yet another exotic organism, without first attempting to assess the possible negative impacts. Yet entomologists have recently applied for permission to introduce the bumblebee *Bombus terrestris* to mainland Australia for pollination of glasshouse tomatoes (as discussed in *Myrmecia* 36/1). *B. terrestris* is widely used for this purpose in Europe, and improves the yield compared to alternative pollination systems. The honeybee, *Apis mellifera*, is unsuitable since tomatoes require buzz pollination (vibration of the anthers to release the pollen), a process which bumblebees, but not honeybees, are able to carry out.

Bumblebees are not naturally found in Australia, but *B. terrestris* was introduced to New Zealand over 100 years ago. In 1992 *B. terrestris* was sighted in Hobart, and has since become established and abundant in the south east of Tasmania. This introduction was probably deliberate, since bumblebees have not previously been known to travel in cargo to new locations, nor to fly long distances across the sea. The application to introduce the species to mainland Australia has so far been rejected, but there is a

distinct possibility that someone might take matters into their own hands and smuggle bees in. So why should we be concerned?

I work in Britain on the ecology and conservation of bumblebees. Over the last two southern summers my colleague, Jane Stout, and I have conducted fieldwork in Tasmania to determine whether bumblebees are having negative impacts on native flora and fauna. This research initially focused on competition with other flower-visiting insects. We are now clear that there is substantial niche overlap between bumblebees and native bees. However, the bee community at all sites in Tasmania is dominated by the far more numerous honeybee. Competitive effects from bumblebees seem likely to be trivial compared to the effects of honeybees, but far more work is needed before we can be confident. It is interesting to speculate as to what the bee fauna of Tasmania may have been like before introduction of alien honeybees in the 1820's.

A second possible, and potentially more serious, consequence of the presence of bumblebees in Australia is that they may enhance seed set, and hence weediness, of exotic plants. Tasmania and southern Australia are already overrun with plants introduced from temperate zones of the northern hemisphere, the home of the bumblebee. A great many of these plants are adapted to pollination by bumblebees; foxgloves, rhododendron, broom, gorse, clovers, bird's foot trefoil and lupins are examples that spring to mind, and there are many more.

The majority of alien plants are not serious weeds at present, and these sleeper weeds may be woken by the introduction of a suitable pollinator. For example the tree lupin, *Lupinus arboreus*, is a native of California and is naturally pollinated by bumblebees. It is listed as one of the worst weeds of national parks in New Zealand, where bumblebees have been present for 100 years. The tree lupin was also introduced to Tasmania, but is not particularly common at present. Our recent research has shown a dramatic increase in seed set of this species in Tasmania in areas where bumblebees are now established. We could well be witnessing the awakening of a sleeper weed. In the near future this plant may become as troublesome in Tasmania as it is in New Zealand.

Once established on the mainland, bumblebees would be impossible to eradicate. Their introduction could result in irrevocable damage to natural ecosystems and increased weed control problems for farmers.

Some native Australian bees are capable of buzz pollination, and mass rearing systems could probably be developed, although this would take time. But a quick fix to ensure enhanced profits by the horticulture industry could prove to be costly to the rest of the Australian farming community.

David GOULSON,
Visiting scientist, UQ,
University of Southampton, UK.

[A summary of the meeting held in Tasmania on Bumblebees, referred to in the last issue of *Myrmecia*, is at: http://www.tmag.tas.gov.au/workshop/proceedings.html. LAM]

An Australian Entomologist in Washington....

State that is.....you know, the one known for Seattle and rain. Well, that's about all I knew about Washington when I sat in front of my computer at Yanco Agricultural Institute in July 1998 and knocked together a CV and application for the position of Assistant Professor at Washington State University in Prosser. I had been at Yanco for 12 years and with New South Wales Agriculture for 22 years and desperately needed a 'sea change' both professionally and personally.

My pleas for a literal sea change, a transfer to Alstonville on the north coast of NSW, fell upon deaf ears in NSWAG head office thus I was forced to look elsewhere.

The WSU position, research and extension on IPM of hops and grapes with minimal teaching, fitted my professional profile admirably and I was suitably impressed with the university, the Prosser station and the general environment, when I visited for an interview in January 1999. I was amazed to find Prosser was located in an arid region in south central Washington. Basically it was Yanco in the Northern Hemisphere (with a little more undulation)! My feelings of being in a parallel universe were reinforced when I toured the Irrigated Agriculture Research and Extension Center; it could have been Yanco Agricultural Institute! Even the station manager bore an unnerving resemblance to my previous station manager at Yanco!

I was successful at my interview and the position was offered to me but there was a lot of doubt from the WSU people as to whether I would accept. After all I had 23 years experience, a good track record and this was an Assistant Professor position. But I needed that sea change and was excited by the challenges in IPM research that appeared to exist in Washington hops and grapes.

So on April 15 1999 I began my research career with

WSU and a year of much learning, turbulence, politics and stimulation. Entomological research with WSU is going to be very exciting for a number of reasons. I guess foremost amongst these is the fact that considerable challenges exist in the development of IPM systems for Washington Agriculture, particularly hops and grapes. As well as being in a parallel universe I also feel when it comes to pest management, that I've journeyed into the past about 20 years. There are very few commercial and successful IPM systems in Washington Agriculture, and the majority of systems that exist are chemically, rather than ecologically based. I have gotten (sorry) myself into an awful lot of trouble over the past 12 months espousing this view. But after being part of and seeing the pest management 'revolution' that has occurred in Australian agriculture since the mid seventies, its difficult not to notice the differences here.

I must admit I was expecting Washington to be very advanced in the development and implementation of IPM, considering that the world's first IPM system was developed on apples here in the late sixties. So what has apparently inhibited the widespread development and adoption of IPM? One likely factor appears to be the fact that pesticides are relatively cheap here (like petrol), and chemical companies are very active in providing pest management advice. Thus, perhaps there has not been the same incentive to develop IPM as in Australia with its higher pesticide costs. It also appears that the Australian 'clean and green' ethic was adopted long before similar attitudes became common in the US. In fact widespread concern over pesticide contamination of food and the environment seems to be relatively recent, fuelled mainly by the Environmental Protection Agency and the Food Quality Protection Act. At my first meeting with the hop growers I was told my IPM ideas would have been rejected outright five years ago!

So I appear to be in the right place at the right time with the opportunity of researching the biology and ecology of pest arthropods and developing ecologically based IPM systems. I do have a great feeling of 'déjà vu'; another opportunity to do what I've done before, but in another domain. A well funded domain at that.

The abundance of industry and government funding for IPM research is very impressive. As an example, the Washington State Government sets aside US$1 million annually for pesticide and IPM research. This money is doled out at about 6 meetings a year where researchers stand up and give a synopsis of their written proposal. The decision on funding is actually made in your presence at the meeting! So maybe the Yanco and Prosser universes are not that parallel after all.

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FEDERATION OF AUSTRALIAN SCIENTIFIC & TECHNOLOGICAL SOCIETIES

The President of FASTS, Sue Serjeantson, has announced that the dates for "Science meets Parliament" Day for 2000 are Tuesday October 31 and Wednesday November 1. The aim is again to provide an opportunity for scientists and technologists to personally put the case for science to their MPs.

Early November will be an excellent time to approach Parliamentarians. It is the beginning of a Budget cycle and, as 2001 is an election year, Parliamentarians will be particularly responsive to issues and concerns from their electorates. The event is open only to scientists who are members of Societies or groups affiliated with FASTS.

The Budget to be handed down in May this year is expected to offer few funding initiatives. But the position next year will be different. Not only will the Government be in pre-election mode, but several initiatives affecting science and technology will be coming to fruition. Recommendations from the Innovation Summit will be flowing through the policy-making channels; and the Chief Scientist's review of Australia's science capability will be complete.

Parliamentarians and scientists clearly enjoyed the event last year, when 170 scientists and technologists met 140 of their political peers. The average meeting lasted nearly an hour, double the scheduled 30 minutes. Parliamentarians wanted to know how science could help both their electorate and the nation, and were generally impressed by the case for investment in Australia's science and research. This year it is hoped to increase the number of younger scientists at the event, possibly by sponsoring suitable young representatives of particular Societies.

There has been action on four issues we raised in the 1999 "Science meets Parliament" Day.

Issue 1: Bringing the Boys (and Girls!) Back Home.

There are schemes in place to send Australians overseas but not to bring them back. There are bilateral arrangements with some countries for scientific travel, but these bilateral schemes do not cater for expatriate Australians.

Response: "I fully support your suggestion for a scheme of fellowships and stipends for expatriate scientists To encourage further opportunities in this regard I announced at the recent Innovation Summit that I propose to make up to five million dollars from the Technology Diffusion Program available to fund joint proposals from the business and research community to bring the best researchers and innovators to Australia to pass on their knowledge and experience to Australians." (Minister Nick Minchin to Sue Serjeantson, March 6 2000.

Issue 2: HECs Equalisation. Teachers with tertiary qualifications in science, mathematics and computing begin teaching on the same pay and conditions as all other teachers. Yet they have a greater HECs burden than teachers from the humanities or those from B.Ed courses which attract the lowest HECs rate.

Response: (From the ALP) "A Federal Labor Government will offer scholarships to high-achieving school leavers to study education with a focus on areas of under-supply, currently maths, science and IT□Recruiting high performing students into a teaching career will be a thirty year investment in raising the standard of teaching. The scholarships will be structured so that each teacher's HECs debt will be paid by the Commonwealth Government each year they remain teaching. This means that a teacher would receive about $1,500 a year for up to ten years, if they stay in the profession." (ALP Shadow Minister for Education, Michael Lee in a speech to the Sydney Institute, Monday March 6 2000). The Minister for Education is also working to address this issue.

Issue 3: A National Site-Licence for Academic Electronic Information. The Australian research enterprise is critically dependent on speedy access to global information, including access to scientific and scholarly journals. FASTS supports developing a coordinated national strategy to facilitate access by universities and major research institutions to electronic academic publications.

Response: Minister David Kemp has acknowledged the urgency of the problem, and his interest in assisting the sector to find solutions. A number of investigative studies have been commissioned by DETYA to contribute to the development of the higher education information infrastructure. DETYA is looking at a number of overseas initiatives, including Canada's Foundation for Innovation for the national site licensing for electronic journals and databases in identified fields at a cost of around $50 million; and the Joint Information Systems Committee (JISC) funding of university library infrastructure in the United Kingdom.

Issue 4: Science for the Bush. The provision of sufficient bandwidth for electronic transmission of information is a major problem for rural and regional Australia. Inadequate bandwidth and slow access speed is a crucial limitation to the uptake of S&T. FASTS calls upon the Government to ensure that rural and regional Australia has access to digital transmission services of comparable bandwidth to those available in metropolitan areas.

Response: The Government recently announced a $150 million project to provide un-timed local phone calls to 37,000 remote phone customers. This will reduce the cost of internet and e-mail access to many people. The ALP plans to modify its telecommunications policy to widen services to the country to provide access to data services such as the internet. The draft policy will be discussed by the Executive this month, and finalised by July.

Issue 5: Cooperative Research Centres. Every few years, the Government of the day re-examines the future of the CRC Program. This ad hoc arrangement, which results in unpredictable schedules for CRC proposals, does not recognise the long lead time required for building collaborative links that result in high quality proposals and effective business plans. The success of the CRC Program has earned it the right to be established as an ongoing part of the Australian R&D landscape. FASTS suggests that bipartisan support be given to the long term continuation of the Cooperative Research Centre Program.

Response: Applications for a new round close in July 2000. There has been no response from Government or Opposition on the issue of making a regular cycle of applications for CRCs.

WWW-SPINNERS

Thanks to Bruce Halliday and Laurence Mound for suggesting web sites for this section.

Institutional sites

In a shameless bit of self-promotion, the Crops Protection Laboratory (the Whitehouse) has a re-vamped and updated web page at **http://www.une.edu.au/agronomy/insects**. This site introduces the research done by Peter Gregg and his group into the ecology and management of *Helicoverpa armigera* and other cotton pests. Peter, Alice Del Socorro, David Britton and myself have our

own web pages, which can be accessed via the main page.
To continue the advertising:
http://envbio.curtin.edu.au/index.html details Curtin University, School of Environmental Biology.
Taxon-specific sites
http://www.nhm.ac.uk/hosted_sites/acarology/ This page provides quick links to all things acarological, including contact details for societies and individual acarologists, journals and books, news about meetings and conferences, and institutions doing acarological research.
Job sites
Not a web site, but an email list - LAWNads Information can be gained by going to:
http://www.webmedia.com.au/lawn/ This is a weekly email advertising jobs, consultancies and other opportunities for paid work in the land and water sector in Australia.
Journals
http://www.science.org.au/nova/ Science in the news web site. An Australian Academy of Science project. Not specifically entomological, but a great way to keep in touch with some of the newsworthy scientific research happening in Australia.
Societies
The Australian Environmental Pest Managers Association:
http://www.pestworld.org/aepma/welcome.htm
The main objective of this Association is to promote and develop the environmental pest management service industry in Australia, and to coordinate its activities so that it may serve to the fullest extent the best interests of the industry and the Australian community.
Recently, the UK House of Lords Select Committee on Science and Technology released its third report titled: **Science and Society**. The report highlights the growing mistrust between scientists and the public, and blames a large part of it on government secrecy. Chapters in the report include public attitudes towards science, values and understanding of science, the communication of uncertainty and risk, engaging the public, science and the media, and science education in schools. The report is available at:
http://www.parliament.the-stationery-office.co.uk/pa/ld199900/ldselect/ldsctech/38/3801.htm
Others
Environment Australia's invasive species site at: **http://www.environment.gov.au/bg/invasive**. The site contains information on non-native mammals, weeds, fish, marine organisms, diseases and parasites, and a limited selection of insects (specifically some *Apis* species and *Vespula germanica*).
If you find that any of these links are dead - **Please e-mail me**. Also, if you have any favorite web sites, please contact me and I'll do my best to list them in the next edition of *Myrmecia*.

Tish SILBERBAUER
Agronomy & Soil Science,
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University of New England, Armidale, NSW 2351.
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STUDENT FORUM

Hello again. This is the last issue before the AES annual conference in Darwin, so I'm including a short note from Tara, who is part of the team organising the student forum at the conference. I'd encourage all students to go to the student gathering; it promises to be lots of fun and not the least bit daunting!
The biennial listing of postgraduate projects is on us once again (see advertisement in this issue). This year I've volunteered to collate the list, so please email your local regional councillors or me (lsilberb@metz.une.edu.au) with details of the name of the students, project titles, degrees, and name of departments & institutions.
Any students or recent students (ie. those that have just finished their postgraduate theses) who would like to express an opinion or to precis their research in this section, please contact me by email or by phone (02 6773 3021).

Tish SILBERBAUER

STUDENT GATHERING AT DARWIN

1. *Student dinner - Darwin Conference.*
To be held within walking distance of the conference venue on Monday night, June 26. We will meet after the Student Forum (see point 2) so that no-one gets lost. Cost will be a maximum of $20. The idea of this dinner is for all students to meet each other in a casual atmosphere so that you can all get to know each other early in the conference.
2. *Student forum*
Topics yet to be finalised. This will also be on Monday night, immediately after the sessions for the day are completed (and prior to the student dinner). It will be an opportunity for students to discuss issues relating to their studies, supervision, publishing, facilities, problems, etc. in a casual atmosphere.
We realise that conferences can be a bit daunting for students, particularly the first time, and so we have decided to put these functions early in the program. Please come along and meet each other early in the conference. These student's meetings will be very

informal and fun, and we encourage all students will attend.
More details will be posted on the conference web page closer to the conference. Anyone with queries please email me
Cheers,

Tara SIMMUL
Tara.Simmul@ffp.csiro.au

ENTOMOLOGISTS!!!

A list is being prepared of Postgraduate Entomological Projects currently being undertaken in Australian institutions. This will then be published in *Myrmecia*. Please send details of your PhD, Masters and Honours Projects (1999 & 2000) to your local Regional Councillor NOW – or at least by the end of June 2000. Regional Councillors will then forward their combined lists to me for final preparation.
Details required are:
Student's name
Project title
Degree
Department and Institution

PLEASE DO THIS ASAP!!!

Tish SILBERBAUER

THESIS ABSTRACT

Social biology of Australian gall-inducing thrips on Acacia

Brenda Kranz
Recently completed PhD student.
Supervisors: Michael Schwarz (Flinders University of South Australia) and Bernie Crespi (Simon Fraser University, Vancouver, BC, Canada)

Gall-inducing thrips on *Acacia* trees in the semi-arid and arid regions of Australia are a fascinating group of haplodiploid insects, particularly for studying the evolution of social behaviour. Eusociality has been identified in five of the 21 described species. In the eusocial species, subfertile soldiers of both sexes comprise a non-dispersing caste that defends the gall occupants against kleptoparasitic thrips belonging to the genus *Koptothrips*. The soldiers sibmate and, along with their mother, the gall foundress, contribute to a second, dispersing generation that becomes the next generation of gall foundresses and their mates. Hitherto, the details of basic lifecycle, reproductive apportionment, and sex ratio have been only superficially investigated. I investigated the social biology of: three eusocial species, *Kladothrips hamiltoni*, *Oncothrips waterhousei* and *O. habrus*; three solitary species in the same or adjacent clades to the eusocial species, *Kladothrips rugosus*, *K. ellobus* and *O. rodwayi*; and a seventh species, *O. morrisi*, which has a fully reproductive, soldier-like morph.
Galls of the eusocial species are mostly initiated by single females. In *K. hamiltoni*, soldiers were protandrous (males produced first) but the overall sex ratio was unbiased, whereas in *O. waterhousei* and *O. habrus*, soldiers were protogynous (females produced first) and the overall sex ratio was highly female biased. As soldiers can only sib-mate, local mate competition (LMC) is expected to be extreme, and so a female-biased sex ratio is predicted. The lack of sex ratio bias in soldiers of *K. hamiltoni* could be due to a balance of LMC between male soldiers and local resource competition (LRC) between female soldiers, because mature brood (soldiers and all dispersers) occupy an average of 95% of the surface area within the gall. This is much higher than in *O. waterhousei*. Conversely, the sex ratio of dispersers was highly female biased in *K. hamiltoni* but unbiased in *O. waterhousei* and *O. habrus*. Sib-mating of soldiers in each of these species, and inbreeding and LMC between dispersers of *K. hamiltoni* and *O. habrus* (Chapman *et al.* 2000), suggest selection for a female-biased sex ratio. The reason for the lack of sex ratio bias in *O. habrus* is not resolved but may be partly due to only partial inbreeding of individual foundresses, therefore reducing LMC. Dispersers of *O. waterhousei* outbreed and basically conform to Fisherian conditions.
The solitary species *Kladothrips rugosus* is in an adjacent clade to the eusocial species. About 60% of galls are induced by single females, and others are induced by a female and male pair. The foundress produces a single generation of brood that disperses from the gall. The population-wide sex ratio of the brood was unbiased, but bimodal, resulting in split sex ratios. Twenty-four percent of galls had only male brood, and all other galls had a population-wide sex ratio that was female biased. Females that produced only male brood were probably virgins and produced males by arrhenotoky. The split sex ratios in *K. rugosus* provide the first rigorous empirical evidence to support the split sex ratio model of Godfray (1990). It is uncertain why there were such high levels of virginity in this species. The life history of a closely related species, *K. ellobus*, also had an unbiased population-wide sex ratio, but it was unimodal and normally distributed, and only two percent of foundresses were virgins. The galls of *K. ellobus* are more densely distributed within and among the host *Acacia* than for *K. rugosus*, which could mean that opportunities for mating are higher.
Oncothrips rodwayi is a solitary species in a lineage that has evolutionarily lost soldiers. This is the only species in the group to occur in the temperate regions

of Australia. The brood size is in the same range as brood produced by the foundress in eusocial species, and much smaller than for other solitary species. Living in a temperate environment means that the overwintering period is probably more predictable, shorter and safer than for species in arid habitats, and rates of invasion by *Koptothrips* appear to be less for *O. rodwayi* than other species (Crespi & Abbott 1999). These factors suggest both that the risks associated with dispersal and the latency period for reproduction do not impose as strong a selection pressure for maintaining a non-dispersing fighting morph as for the eusocial species. *Oncothrips morrisi* is in the same clade as the eusocial species and basal to the soldier-producing *Oncothrips* lineage. Like the eusocial species, the foundress produces a first generation of morphologically distinct, soldier-like, non-dispersing microptera. However, there was no evidence of reproductive skew between the foundress and microptera. The disperser brood size is between about six and 13 times greater than any of the eusocial species studied here or elsewhere, and the demographic patterns appear to be intermediate between the solitary and the eusocial species studied here. *Oncothrips morrisi* could represent a plesiomorphic state for reproductive skew in soldiers, i.e. soldier morphology evolved before reproductive skew. Alternatively, the lack of reproductive skew could be an apomorphic state, perhaps related to large gall and brood sizes.

The initial selection for a non-dispersing morph in these thrips could have been due to the costs involved in dispersal and latency to reproduction. Once non-dispersal had evolved there may have been selection for parental defence of offspring, the costs of which could have involved a tradeoff with fecundity. In order to accommodate an extra generation, there could also have been selection for smaller galls as a cryptic strategy to avoid parasitism. Small galls could have led to spatial constraints for reproduction and, hence, might also have resulted in reproductive skew between the gall foundress and her non-dispersing daughters. The high relatedness in the eusocial thrips, due to sib-mating of soldiers and inbreeding of dispersers, could have facilitated the transition from parental care to alloparental care. Sib-mating and inbreeding could have also reduced the relatedness asymmetries of females to their sisters and brothers, due to haplodiploidy, perhaps explaining the novelty of soldiers comprising both sexes in a haplodiploid. Haplodiploidy could be important in promoting very high levels of inbreeding because the fitness of females is increased as males carry and flush a high proportion of the genetic load. Gall living might also have promoted eusociality in these species by selecting for non-dispersal, gall defence and by facilitating inbreeding.

References:

Chapman, T.W., Crespi, B.J., Kranz, B.D. & Schwarz, M.P. (2000) High relatedness and inbreeding at the origin of eusociality in gall-inducing thrips *Proceedings of the National Academy of Sciences*, 97, 1648-1650.

Crespi, B. J. and Abbot, P. (1999) The behavioral ecology and evolution of kleptoparasitism in Australian gall thrips. *Florida Entomologist*, 82, 147-164.

Godfray, H.C.J. (1990) The causes and consequences of constrained sex allocation in haplodiploid animals. *Journal of Evolutionary Biology*, 3, 3-17.

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AES EXECUTIVE REPORT

The Core Executive met on 20 October and 18 November 1999, and on 11 February and 23 March 2000.

The Executive has been kept busy with the oncoming GST and has finally been notified that an ABN would be useful.

The organization of the Darwin Conference is well in hand and the Executive is hoping for a well attended conference – the time of year is a great escape from the southern cold.

Laurence Mound seems to be settling in as *Myrmecia* editor and has not lost his ability to stir the pot with his commentary. Regional Councillors are urged to collect examples of entomological topics for these to be reported in *Myrmecia*, with the hope of influencing State School curriculum committees. Also, the Executive has decided to have permanent notices placed *Myrmecia* to try and generate interest in the awards, especially the prestigious Mackerras Award. It is hoped that younger members will think about who among their "elders" deserves some recognition and more nominations will come in.

After a very long career as Technical Editor, Tony Wapshere has retired. We ask the entire Society to join us in thanking him for his many years of dedication to keeping our Journal to its high standards. Another Tony (Clarke) will be replacing Tony Wapshere as technical editor and Heather Proctor will be taking over from Tony C on the Council.

NEW MEMBERS

Elected 20 October 1999

Full Member:

Mrs Julianne FARRELL, PO Box 719, Wagga Wagga NSW 2650

Mr Steve ALLARD, 171 Maysfield Rd, Moorooka QLD 4015

Nickolas JONSSON, 11 St David Street, Kenmore QLD 4069

Student Member:

Mr Sivakumar MOHANDASS, Dept Zool. & Entom., U.Q. St. Lucia QLD 4072

Elected 18 November 1999

Joint Member:

Mr David BRITTON (with L.Silberbauer) 76 Lynches Rd, Armidale NSW 2350

Student Member:

Ms Claire STEPHENS, Dept. of App. & Mol. Ecol., Waite Campus, Univ. of Adelaide, Glen Osmond, SA 5064

Elected 11 February 2000

Full Member:

Prof. AAM ETMAN, Fac. of Agric., Univ. of Cario, El Fayoum, Egypt.

Mr BJ RUNDLE, 25 Milton St, Nunawading VIC 3131

Dr DM HUNTER, Australian Plague Locust Commission, GPO Box 858, Canberra ACT 2601

Miss A CLEARY, PO Box 102, Toowoomba QLD 4350

Mr JD DUFF, QDPI, Gatton Res.Sta. Locked Mail Bag 7 M/S 437 Gatton QLD 4343

Mr ATH HARDY, 1/34 Rome St, Toowoomba QLD 4350

Elected 23 March 2000

Full Member

Mr Jamie HOPKINSON, DPI, PO Box 102, Toowoomba QLD 4350

Mr Bradley McNEIL, 28Banksia Street, Orange NSW 2800

Mr Christiaan THEMSEN, 25 Glenview Cres., Bundaberg QLD 4670

Student Member:

Miss Melanie ARCHER, Zool. Dept University of Melbourne, Parkville VIC 3052

Ms Sydney JORDAN, 6 Messines Ave, Milperra NSW 2214

Mr Andrew DAVIES, 60 Piddington St, Ashgrove QLD

AES Public Officer

The Society Executive is pleased to announce that Michael Lenz has accepted the position of Public Officer of the AES. Michael's address and contact numbers are given on the inside front cover of this issue.

MACKERRAS MEDAL

Do you know an entomologist who deserves special praise?

The **Mackerras Medal** is the Australian Entomological Society's award for excellence and can be awarded every two years to a financial member of the Society who is:

a young entomologist (< 50 y),

pursuing excellent research, and

has outstanding personal qualities.

Any financial member, including students, may make a nomination to the Secretary. The nominations should be received at least 3 months before the AGM and should include:

the Candidate's name and date of birth,

academic distinctions,

appointments and memberships in societies,

a list of the nominee's most important publications, and

a short statement (500 words) explaining why the award should be made.

NOMINATIONS NEEDED

Members of AES should note that nominations are now needed for a new Core Executive.

INSECT ILLUSTRATION COMPETITION

The Australian Entomological Society invites previously unpublished and undisplayed entries to this competition to be judged and displayed at the Society's Annual Scientific Conference to be held in Darwin between the 25th and 30th June 2000.

Illustrations of an insect, arachnid or myriapod will be accepted.

There will be two categories: Illustration and Photography

Illustration Prizes: 1st - $250; 2nd - $100; 3rd - $50

Photography Prizes: 1st - $200; 2nd - $100; 3rd - $50

NOTE - no separate categories for colour and black & white.

Maximum number of entries: three per person.

Entries should be mounted and brought/delivered to the Conference in Darwin. All proposing to enter should notify the NT Regional Councillor in advance if possible (email martin.shivas@nt.gov.au). The society shall have the right to display the selected works in their publications, reproduce them on Society goods for sale (with appropriate acknowledgment), and in magazines (for a fee).

Illustrations should not exceed 21 x 30 cm.

Photos should not exceed 20 x 25 cm.

Each entry must have the following information on the back:

Name and address of entrant; Category of entry; Title of entry; Scientific name of the arthropod when known. Entries may be posted to the NT Regional Councillor, but must be carefully packaged and include stamps or a postal order to cover the cost of return mailing.

OBITUARY

Five entomologists died after a boating accident in the Sea of Cortez [Gulf of California]. Gary Polis, the renowned scorpion biologist and chair of the UC Davis Department of Environmental Science and Policy, his postgraduate student, Michael Rose, and three Japanese ecologists - Takuya Abe, Masahiko Higashi (both termite ecologists and well known theoretical biologists), and Shigeru Nakano from the Shigeru Nakano Center for Ecological Research at Kyoto University in Japan died after their boat was swamped and overturned while returning from an island research site in the Sea of Cortez. All had life jackets, but apparently died of hypothermia and other complications while trying to cling to the overturned boat or to swim for shore. Four other postgraduates were able to swim to islands and were later rescued. Details can be found at: http://www.news.ucdavis.edu/accidentnews/

BOOK REVIEWS

Heliothine Moths of Australia: A Reference Guide to Pest Bollworms and Related Noctuid Groups

By Marcus Matthews

Monographs on Australian Lepidoptera volume 7, CSIRO Publishing, Collingwood, Victoria, Australia. 1999. Pp. 332, colour illustrations. Book (hardcover) and CD-ROM. $A90.00. ISBN 0643 06035 6.

[The following is an abridged version of a full, scholarly review to be published in *Systematic Entomology* in July, produced here with the author's agreement. Members of AES may know already that, regrettably, Marcus Matthews' career path has now diverged radically from entomology, where his contributions to the taxonomy of insect pests have been so outstanding. LAM]

Noctuid moth caterpillars of the subfamily Heliothinae are perhaps the most serious of all pest Lepidoptera. Feeding on flowers and fruits, they cause proportionately greater losses in agricultural production than leaf-feeding species. The massive expenditure on chemical control, generally only partially successful, and indirect and unquantified cost to the environment of prolonged and repeated pesticide applications, drives a search for new control strategies. Central to this is a critical insight into the systematics of these pests. Improved understanding of the relationships among heliothine genera and species will permit more specific targeting of biological control agents. With this in mind, several Australian organisations concerned with heliothines as pests collaborated to fund this taxonomic review.

The author chose to write specifically for a target audience comprising "practical entomologists", such as agriculturalists, biocontrol engineers, ecologists and molecular biologists. Thus, although it remains fundamentally a taxonomic treatise, the traditional layout of a monographic work has been modified. Purely taxonomic information, such as species synonymies and type data not of prime importance to the target audience, is excluded from the main text. Instead, such information is placed either into appendixes or onto the accompanying CD-ROM. The overall result is a taxonomic product in which the information required by the target audience is presented in a streamlined and accessible form, but without ignoring the needs of the systematic community.

Following an introductory section setting out the author's objectives, there are five general review sections. The first of these is a summary of the "Agricultural importance and control of Heliothinae in Australia". However, as *Helicoverpa armigera* and *Helicoverpa punctigera* are currently the only major heliothine agricultural pests on the continent, discussion is restricted to these two species. In section two, observations of life history strategies, behaviour and other biological traits of Australian Heliothinae are discussed and set into the global context of heliothine biology. The third section reviews heliothine systematics, both in general and with particular reference Australian taxa. The fourth section describes adult and immature stage morphology, while the fifth reviews heliothine phylogeny. In this section, Matthews' builds upon his earlier morphological work by incorporating evidence from more recent analyses based upon molecular sequence data to produce an improved estimate of phylogenetic relationships among the genera. Also presented is a brief analysis of the phylogenetic relationships among the Australian *Helicoverpa* species.

The main part of the book is occupied by the genus and species accounts, of which the latter are arranged alphabetically for ease of use. For each of the five genera, there is a diagnosis, followed by succinct sections on global distribution, general biology and pest status. Each of the 38 species accounts begins with a 1-2 sentence description, which gives a general impression of the moth,followed

by a detailed diagnostic section in which the features that distinguish a species from similar species are made plain. This is the most important written section for those who need to identify heliothine moths. The remainder of the species account is collated under the general heading "Description" and it is here that the presentational consistency breaks down somewhat. Matthews clearly intended to streamline these species accounts so that they included only the information of relevance to his target audience of "practical entomologists", but was constrained by the standard format of this monographic series. Each species account includes a lengthy description of the adult moth. I do not understand the purpose of this, as the important information for identification is already provided in the differential diagnoses and colour plates. These descriptions have also led to redundancy and unnecessary repetition. For example, in the introductory overview of heliothine morphology (page 15), we are told that "the compound eye is smooth and unlashed, varying in size and shape from full and globular to very small and eliptoid [sic]". However, no Australian heliothine shows any condition other than the former and thus the sentence "Compound eye fully developed, globular" is needlessly included and repeated 38 times.

This book is lavishly illustrated and the figures and plates are of the highest quality. Where available, all male and female genitalia are figured as monochrome photographs. Vesicas were everted using the "phalloblaster" and mounted such that their three-dimensional coiled structure is spectacularly clear. The colour plates are equally impressive. There are eight plates of conventionally prepared dead adult moths, which together with the differential diagnoses, can be used to identify most species. Further colour plates illustrate living moths, mostly resting on various grass stems, and living larvae, mostly posing on apparently the same grass stems. Separate plates illustrate the diagnostic features of *Helicoverpa armigera* and *H. punctigera* adults and larvae. There are also colour photographs of living pupae and sixteen habitat shots of heliothine field survey localities.

The accompanying CD-ROM contains four folders. "Material examined" is a full list, in *Microsoft Word 97* and rich text file formats, of specimens examined and includes full standard data. "Nomenclatural database" includes a zoological catalogue written using the taxonomic package, *Platypus*. Unfortunately, this program does not yet seem to be widely employed outside Australia, thus severely restricting the current utility of the catalogue to external users. The database can be opened using *Microsoft Access*, once it has been copied to a writeable disc and the read-only attribute turned off. However, I found the resulting 31 tables totally unintelligible and there was also the ominous warning that any changes made using *Access* "may have unpredictable results if the file is subsequently opened with *Platypus*". My cynical side cannot help but see a subtle sales-pitch here. "Specimen list" contains Australian specimen data as a *Microsoft Excel 97* spreadsheet, a delimited text file and formats suitable for viewing using GIS packages such as *MapInfo* and *ArcView*. Finally, "Type specimen images" contains images of 81 primary types of Australian heliothine species.

There can be no doubt that monographs and taxonomic revisions form the bedrock of biological science. They collate and interpret fundamental data derived from individual specimens, and provide critical appraisal of species limits, relationships and distributions. Unfortunately, however, monographs and revisions are presented all too often in a very formal and, frankly, boring format, in which important data are not transparent. Consequently, these basic information sources often go unappreciated by those for whom elements of the data could be of the greatest use. The present work is an excellent example of why this need not be so. By carefully considering his target audience, Matthews has ensured that they can find the information they want, in a form that is useful to them, while at the same time ensuring that the basic body of systematic data is also recorded in a flexible and useful format. I would recommend this book to virtually everyone with an interest in biology: to systematists, as an example of how to ensure taxonomy and revisionary monographic studies remain relevant in the twenty-first century; to "practical biologists", as an example of the sort of thing they could have had, if they had known it could be provided; and to publishers, as an example of how extremely saleable taxonomic products of very high quality can be made widely available at relatively low cost.

Ian J. KITCHING
Natural History Museum, London

The Australian & New Zealand Field Guide for Diseases, Pests and Disorders of Grapes

Edited by Peter Magarey, Alison MacGregor, Malcolm Wachtel and MC Kelly.
Designed by Barbara Coddington.
Winetitles, PO Box 1140, Marleston SA 5033. $20.00.

There has to be an inverse correlation between the size of a volume and the length of its title. If you write a 500 page tome about a subject you can call it an 'Introduction'. But if you write something small and useful like this book, the title must spell out the contents or no one will ever believe how much information you have packed into so few pages. This field guide really will drop into your pocket. And the 100 laminated pages in full colour with 320 photographs, loosely mounted on a spiral, really do resist water - also beer, wine and other fluids (note the dedication of *Myrmecia* reviewers!). The text is fully visual, starting with two pages of thumb-nail pictures to guide the reader to particular pages dealing with problems such as yellow veins on green leaves, red patches on canes, or fluffy white bugs on buds. And the main pages are cross-referenced with an efficient system of "looks like" for those times when the wrong identification route is taken. But it is not only pest damage that is illustrated. Mineral deficiencies, heat stress, lightning, mechanical damage, and even mutations – these and other items are all discussed and illustrated at some level. Grapevine growth stages, a seasonal monitoring calendar, and a full index are also all included, together with a ruler and measuring apertures on the back cover. In viticulture IPM is increasing in importance, and this little book will be useful to anyone wanting to know more about what is going wrong with their vines. Getting growers to look really carefully, whether at bugs or blights, is a major obstacle known to all economic biologists. This book will certainly help in overcoming this initial step toward better pest control. The editors and designer are to be congratulated on this very practical exercise in the public understanding of science.

LAM

An Illustrated Guide to the Parasitic Wasps Associated with Citrus Scale Insects and Mealybugs in Australia

By Malik Malipatil, Kelvin Dunn & Dan Smith
Crop Health Services, Agriculture Victoria, PMB 15, South Eastern Mail Centre, Vic 3176. $40.00 (postage - 6 $ Australia, 9 $ overseas).

This is a very professional product, involving more than 120 pages of text followed by 56 colour photographs of live parasitoids and 26 SEM pictures of morphological details. The identification keys deal with 53 common parasitoid species, and one page is devoted to each of these giving details of its nomenclature, structural diagnosis, biology and distribution. The good impression the book creates should cause no surprise, because the Acknowledgements reads like a "Who's Who" in chalcidology and Australian entomology. The book has a clear structure, and it is easy to find the information you are looking for. The various tables in particular give quick overviews of biological and distributional information, also the economic importance of the parasitoids.

The section on preparation methods is too brief for anyone unfamiliar with the techniques, and will probably not help greatly to get the high quality mounts that are necessary for correct species identifications. Curiously the authors do not mention the most common method for killing and preserving parasitoids – that is, transferring them straight into 70% (or 100%) ethanol. Also, too many people seem to need telling explicitly that it is essential to label specimens accurately!

The keys are of a very high standard, easy to use and well illustrated, and the book has clearly benefited from the input of chalcid specialists. The diagnostic descriptions will, together with the black and white illustrations, SEMs and colour photographs, often allow species identification even without a reference collection for comparison.

The book is not only a tool that is easy to use for identifying parasitoids of citrus scales and citrus mealybugs, it is also a useful introduction to the literature on these important insects.

Stefan SCHMIDT

Sampling Ground-dwelling Ants: Case Studies from the Worlds' Rain Forests

Edited by D. Agosti, J. D. Majer, L. E. Alonso and T. R. Schultz

This volume contains seven case studies of ground-dwelling ants in tropical or sub-tropical rainforest areas. The chapters are:

Litter ant communities of the Brazilian Atlantic rain forest region (by J. H. C. Delabie, D. Agosti and I. C do Nascimento)

Litter ant communities of the Brazilian Atlantic rain forest region (by J. H. C. Delabie, D. Agosti and I. C do Nascimento)

Investigation of the diversity of leaf-litter inhabiting ants in Pasoh, Malaysia (by A. Malsch)

Ant inventories along elevational gradients in tropical wet forests in Eastern Madagascar (by B. L. Fisher)

The Australian rain forest ant fauna: A biogeographic overview (by A. N. Andersen and J. D. Majer)

Ground ant communities from central Amazonia forest fragments (by H. L. Vasconcelos and J. H.C. Delabie)

Minesite rehabilitation studies: A method for visualizing succession (by J. D. Majer)
This volume may be obtained by sending a cheque for AUS$20.00 (inclusive of postage) to Prof Jonathan Majer, School of Environmental Biology, Curtin University of Technology, GPO Box U1987, Perth WA 6845, Australia. Cheques should be made payable to "Curtin University of Technology"
This is a companion volume to the forthcoming book entitled *Ants: Standard Methods for Measuring and Monitoring Biodiversity* (ed. by D. Agosti, J. D. Majer, L. E. Alonso, and T. R. Schultz), which will be published in November 2000 by Smithsonian Institution Press. It will be available from booksellers or directly from the Smithsonian Institution Press, phone 703-661-1599, toll-free 800-782-4612. The cost will be $60 hardcover or $26.95 cloth cover. If in Australia, please note that prices are in US dollars, and the book will be available from Peribo Pty. Ltd., New South Wales, ph. 61-2-9457-0011.

Jonathan MAJER

REGIONAL NEWS

AUSTRALIAN CAPITAL TERRITORY

CSIRO Entomology

After a bumper contribution to the February issue of *Myrmecia*, CSIRO Entomology seems temporarily exhausted of news items. Perhaps some sort of El Nino effect is at work and there will be floods of news items for the next issue. In the meantime, **Penny Greenslade** spent an entertaining two weeks collecting Collembola in the White Mountains National Park in central Qld on a Queensland Geographic Society Expedition. The edge effects of a couple of cyclones ensured that variable weather conditions were experienced so that species which only become active after heavy rain were collected as well as species active in the normal very hot dry conditions. The expedition was a joint venture with the magazine Australian Geographic and a report on the trip will appear in their magazine next year.
In early February the Co-operative Research Centre for Sustainable Production Forestry and CSIRO Entomology hosted the *Symposium on Insect-Eucalypt Interactions*. The symposium was held in the new CSIRO Discovery Centre and was opened by **John Kerin** and **Jim Cullen**. An opening challenge on the part of John Kerin to identify a sprig of *Eucalyptus* was won by **Brad Potts** (CRC Sustainable Production Forestry, Hobart). Brad's prize included a bottle of wine and the hand of John's eldest daughter in marriage – what a shame Brad is already spoken for! The 55 delegates enjoyed 2 days of thought-provoking talks from international and national speakers, excellent refreshments and some colourful group discussions. Hopefully, the importance of "academic speculation" will become apparent to the more "sceptical" of delegate(s). A final outcome of the meeting included a unanimous decision to hold such symposia every 3 years. **Martin Steinbauer** hopes another enthusiastic forest entomologist will take up the challenge to organise the next one! The symposium was followed by an enjoyable field trip to see experimental plantings belonging to the CRC Sustainable Production Forestry, CSIRO Entomology and CSIRO Forestry & Forest Products. The week was concluded with a 2-day workshop on Pest Management hosted by the CRC Sustainable Production Forestry, Forestry Tasmania and the School of Forestry, ANU.
During February and March, **Martin Steinbauer** and **Sharon Strauss** (University of California, Davis) studied tri-trophic interactions involving eucalypts, scales, *Uraba lugens* and its parasitoids. It appears that trees infested with *Eriococcus* scale are often associated with infestations of *U. lugens*. Exudates of honeydew from the scale appeared to be providing a carbohydrate source to *U. lugens*. During night-time observations Martin and Sharon also observed *Mnesampela privata* feeding upon honeydew. During daylight hours the suite of invertebrates on scale infested trees was found to change drastically. At night scale trees are mostly frequented by moths but during daylight they are visited by often large numbers of Hymenoptera (ants and wasps) and flies. A neat incidental night-time observation concerned the incidence of frogs on scale trees apparently attracted by the large numbers of moths. A variety of parasitoids were reared from the *U. lugens* larvae collected during the study.
Mamoru Matsuki arrived safely in Montpellier, France, after a brief sojourn in Alaska. Prior to beginning his studies on the host specificity of asian gypsy moth he surveyed some experimental plantings of eucalypts. One of the sites, consisting of more than 25 species of eucalypts and lots of other Australian shrubs planted more than 20 years ago, was on a hillside overlooking the Mediterranean near the French Riviere (Cannes 30 minutes and St Tropez 2 hours drive away). Field sites around Canberra rarely had such a vista! Mamoru was able to locate another Aussie admiring the eucalypts, i.e. some *Gonipteras*.
Gerald Moritz of the University of Halle again visited **Laurence Mound** this year for three weeks. During

this visit they compiled together a new data matrix on 180 species of thrips, including pest species wordwide, and generated and tested a new LucID identification system for all these species. Now all that is needed is to prepare and add the 2000 or so photomicrographs to the system! **David Morris** has now joined Laurence's lab as a postdoc, funded by ABRS, with the objective of producing a book on the *Acacia* thrips swarm and their curious social behaviours.

Martin J. STEINBAUER
ACT Regional Councillor

NEW SOUTH WALES

University of NSW - CERIT

The year 2000 has started at a steady pace, and an increase in workload has seen the return of **Sarah Lunau** to the CERIT team. Sarah stood in for **Julie-ann Short** during the last months of her maternity leave, and with the beginning of a new and involved screening project, Sarah was re-appointed to the staff of that project. Julie-ann has been back at CERIT since October, and is well into the swing of things again.

CERIT staff have been kept busy with consultancy projects on "Biting arthropods in the workplace", "Insect adulteration of food products" as well as Pest Management Audits and training courses for the food industry.

Because the Olympics conflicts with our window of opportunity to manage Symposia, CERIT will not be organising a symposium in September this year, but may still have some involvement in the running of "Termite Awareness Week" from 23-39 July. Two CERIT Symposia are planned for 2001. The first on "Requirements for Training Termite Managers", the second on "Managing Pests in the Food industry". Watch this space for details, or email CERIT (CERIT@unsw.edu.au) to be included in the mailouts.

Chris Orton attended the PICA-HIA workshop on termites in March and presented a session on "Flies as Health Pests in Australia" to a training workshop for Aventis in April.

Chris Virgona has been a regular visitor to CERIT since moving to CSIRO laboratories in North Ryde. Other visitors to CERIT have included: **Scott Lucas** and **K.T. Ching** (Kambrook-Breville); **Roger Sargent** (Schering-Plough Animal Health - Aust); **David Sawutz** (Schering-Plough Animal Health – USA); **Angela Hinchley** (Spinifex Public Relations); **Peter Huxley** (Com Strategies).

Julie-ann SHORT

Medical Entomology - Westmead Hospital

Last year **Richard Russell** presented papers in July at the International Conference on Urban Pests in Prague, Czech Republic, in August at the International Congress of Virology in Sydney, and in September at the European Conference of the Society for Vector Ecology at Wageningen, The Netherlands. He attended a workshop on dengue held by the Queensland Department of Health in Cairns in October, held discussions on research into mosquito control in constructed wetlands with CSIRO at Griffith in November, and participated in a NSW Health Department workshop on mosquito control at Yanco in December. This year he has been recovering!

The newest addition to the Medical Entomology team is **Petrina Johnson** who joins us from the University of Queensland. Petrina is investigating the ecology of pest mosquitoes in the freshwater and saline wetlands surrounding the Olympic site in Homebush Bay. This study follows two major studies by **Cameron Webb** and **Karen Willems** who are currently in the process of writing up their findings. Cameron has also completed writing a Mosquito Monitoring and Control Operational Plan for the Olympic Co-ordination Authority, a document that draws on the findings of the Department's investigations of the Homebush Bay mosquito fauna. Continuing the department's involvement with the Sydney 2000 Olympics, Karen Willems was involved with mosquito surveys at a number of Olympic venues including the Sydney International Equestrian Centre at Horsley Park, the Dunc Gray Velodrome site at Bankstown and the International Regatta Centre at Penrith Lakes. Mossies weren't the only things on the department's hit list as Stephen Doggett and **Merilyn Geary** also completed a tick survey of the Equestrian Centre at Horsely Park.

The NSW arbovirus program is drawing to a close and **John Haniotis**, **John Clancy**, **Katrina Patsouris** and **Stephen Doggett** are busy compiling the season's results. It was one of the quieter season's for arbovirus activity, due in part to the relatively cool temperatures experienced during the early part of summer that resulted in lower than expected mosquito abundances.

As well as working hard on the Medical Entomology website:

http://medent.usyd.edu.au,

Stephen has created and maintained the NSW Health Department's Arbovirus website:

http://www.arbovirus.health.nsw.gov.au

where public health officers can access mosquito abundances, arbovirus isolations and climatic

information from the monitoring locations across NSW. The department will be presenting a number of papers at the 8th Arbovirus Research in Australia & 4th Mosquito Control Association of Australia Conference to be held on South Stradbroke Island in July. Some of the more enthusiastic members of the department have already packed their suncream and swimmers.....

Cameron WEBB

University of Western Sydney

Andrew Beattie spent the second half of March overseas on petroleum spray oil and related business. He had meetings in Johannesburg, participated in the launch of Caltex's spray oil DC-Tron Plus in Nairobi (with the Australian High Commissioner) and held seminars in Dubai. On the return leg, he attended a meeting in Hanoi with participants from ACIAR and INRA on a potential project on huanglongbing (citrus greening).

Robert Spooner-Hart hosted senior staff from the South China Agricultural University in mid April, who were interested in activities in IPM, oil sprays and botanical pesticides.

NORTHERN TERRITORY

Northern Australia Quarantine Strategy

After signing up as a defence civilian, **Glenn Bellis** conducted a pest survey of Dili to assist in the risk assessment of returning servicemen, contractors etc to Australia from this port. He decided to make the most of his new status by returning there with **Hugh Richards** of AQIS, Melbourne to conduct a trial on the repellent affect of a new copper compound on giant African snail.

CSIRO Wildlife and Ecology

Alan Andersen has been busy with CRC business, including reviews of existing projects, preparation for our fifth year review, and project development for our re-submission. We are continuing with our collaborative projects with the Bioregional Assessment Unit of the Parks and Wildlife Commission of the NT, providing invertebrate input to their conservation planning. We are also undertaking a major communication effort on the results of the Kapalga fire experiment. The results strongly suggest that conservation managers need to be taking fire frequency more into account than is currently the case. As for many other faunal groups, most insect groups appear to be affected more by fire frequency than by fire intensity. We have held a series of seminars with regional fire managers, and will soon embark on an extensive pubic education program. On the spider front, processing of survey material from projects associated with the CRC for Tropical Savannas, under the guidance of **Tracey Churchill**, has been completed. The team consisted of **Hazel Brown**, **Catherine Orgeas** (now back in France), **Jenni Webber** and **Robbie Hendersen**, with samples providing some really interesting spider taxa. These surveys aimed to assess the impacts of various land uses or disturbances such as grazing, military training, tree clearing and conservation planning. Hazel Brown is now identifying the other invertebrate specimens from the Qld Tree Clearing Project based in Emerald, which commenced in June 1998. This study of the environmental effects of tree clearing is a collaboration of the CRC, PWCNT and CSIRO TERC and is funded jointly by QDE and the National Heritage Trust. **Gus Wanganeen** continues to hone his spider identification skills and help get the spider lab's new digital image capture system up and running.

Tracy Dawes-Gromadzki has been busy over the wet season collecting termites from various sites along the North Australian Tropical Transect (NATT), with help from **Marianne Baird** and **Tony Hertog**. This work is investigating the relationships between termite community structure and rainfall, vegetation and soil type. Fieldwork is also continuing on testing the success of different bait types in sampling termite species richness. Tony Hertog is currently counting and identifying the NATT ant samples to species. The invertebrate group collected these samples at various sites along the NATT during 1996 and 1997 under the direction of Alan Andersen. **Ben Hoffmann** has been busy finalising his PhD thesis and preparing talks for the XXI Congress of Entomology in Brazil and a lecture at the New Mexico State University in America. Both will be presented during a round the world trip as celebration of the end of his PhD. German undergraduate student **Michaela Schmid** is with us for a 4 month traineeship, helping with our invertebrate biodiversity work. At present she is trying to put some sort of systematic order to the hundreds of species of mutillid wasps that we have accumulated over the years. An extraordinarily diverse and fascinating group!

Territory Health Services, Medical Entomology Branch

There has been frantic activity in the Branch over the last few months with a number of exotic mosquito incursions and an outbreak of Australian encephalitis.The exotic dengue vectors *Aedes albopictus* and *Ae aegypti* made two separate forays

into different Darwin port areas over the last two months and required intense Branch surveillance and eliminating measures. Together with AQIS, Branch members including **Peter Whelan**, **Gwenda Hayes** and **Jane Carter** were involved in the implementation of immediate adult fogging and larval spraying measures. Increased ovitrap surveillance by both the Branch and AQIS has indicated that the latest importations have been successfully eliminated. The elimination was a good example of the correlation between speedy detection and low cost and success in elimination of exotic mosquitoes. Unfortunately the same can not be said for the detection of the frosty mosquito *Culex gelidus* in the NT. Detection was delayed because it was first recognised far from our borders in Alice Springs and Katherine, and its appearance as adults which is very similar to a native species *Culex vicinus*. This species was first detected in the Brisbane area by **Mike Muller** and associates near Brisbane airport. Gwenda Hayes and Jane Carter first recognised specimens from Katherine while undertaking extensive larval control operations following the February floods. Peter, Jane, Gwenda, **Bernadette Haigh** and **Andrea Wilson** have been conducting surveys of wastewater treatment areas around the top end to determine the spread of this mosquito vector of Japanese encephalitis. In addition to organising planning development comments and drainage enhancements for next dry season, Andrea has been locating a breeding site and link breeding *Cx vicinus* through successfully. Gwenda has successfully link bred the *Cx gelidus*, so we now have good reference material of these two species.

Peter has had talks and inspections with various authorities in Katherine and the Darwin area on control requirements for *Cx gelidus*. While inspecting the sewage ponds in Batchelor he located the first known larval habitat of *Ae reesi* and he and Gwenda succeeded in link breeding some specimens, including males.

Peter has also been caught up in the latest Australian encephalitis media warnings and subsequent outbreak in central Australia. Five cases have been confirmed over a wide area of central Australia in addition to the ones in WA.

The Branch now has a new permanent member, **Brett Brogan**. Brett undertook his undergraduate degree in the NT. **Nathan Barett** and **Brian Baker** have left the branch. Nathan has taken up a teaching career and we wish him all the best in his new direction. He even came back to lend a hand during his first vacation break! Two other new additions are **Brad Hunt** and **Adam Parrot** for short-term, longer-term ? contracts and all are now under the wing of Gwenda with on the job training.

Martin Shivas has been confirmed as the fully funded project officer for the next 12 months on the *Culicoides* project in the Palmerston area and is busy sorting and analysing the catches of the first large emergences of *C. ornatus*.

A visitor to the branch was **Paul Shaefer** from the USDA Beneficial Insects Introduction Laboratory in Newark, Delaware, who inspected the Branch collection of urticating caterpillars and moths, and was introduced to *Euproctis lutea* aggregations of caterpillars at the base of food plants in open forest near the laboratory.

D.P.I.& F. Entomology

Entomology Branch has been preparing for the Society's Conference, for Katherine Farm and Garden Show, and for the upcoming Fred's Pass Show. **Stuart Smith**, **Graham Brown**, **Megan Hoskins**, **Mike Neal** and **Cymberline** attended the Farm and Garden Show held at Katherine Research Station on 8th April. Stuart Smith attended and spoke at a Mango Industry Conference in Cairns while **Heather Wallace** visited Alice Springs to set up a fruit fly grid as a prerequisite to further work in the area.

A workshop was held at DPIF on 7th March to discuss the crazy problem in East Arnhem Land. Resolutions from the meeting included provision of further information and specimens to aboriginal communities in the region, and to seek money for further studies.

Ted Fenner retires at the end of April, and is being replaced by Graham Brown as Quarantine Entomologist. This position has been heavily involved with the East Timor issue, and will continue to do so while there are heavy passenger and cargo movements between Darwin and Dili.

Martin SHIVAS
NT Regional Councillor

QUEENSLAND – NORTH

SAS – Scientific Advisory Services

Check out the new 100% Australian owned Scientific Advisory Services website – **Richard Piper** has plans to upgrade to a fully interactive and informative page, but it's a start for now:
http://www.saspl.com.au/

QIMR

During January/February a team of scientists conducted an investigation into airborne insects on Saibai Island, in the Torres Strait. The aim of this

study was to sample insects potentially migrating from PNG into the Torres Strait under certain weather conditions. In the evenings, a helium filled balloon, nicknamed the "Red Zep", was used to raise a sampling net to about 100m above ground. Researchers were particularly interested in mosquitoes spreading Japanese encephalitis. The team consisted of **Dr Roger Farrow** (Consultant), **Dr Scott Ritchie** and **Brian Montgomery** (Qld Health, Cairns), **Peter Foley** (Qld Health, Townsville), **Harry Seriat** (Qld Health, Thursday Island), **Cheryl Johansen** and **Andrew van den Hurk** (University Queensland) and **Dr Anna Morrisen** (NAQS, Cairns). This study was supported by a grant from AQIS. Preliminary ID's on non-mosquito insects have begun by NAQS Entomologists, Scott Ritchie having identified the one (!) mozzie specimen zepped!

JCU - CNS

Participants at a Biodiverity course at the Cape Tribulation canopy crane site set up a one-hectare plot and used the standardised sampling protocol (the "shopping-basket" approach using a suite of taxa), as developed by **Roger Kitching**, to survey the vegetation, forest structure and sample the invertebrates. The participants came from 13 countries, mostly Asia-Pacific. They were given the opportunity to spend a few days learning a bit more about key invertebrate groups, especially identification but also some ecology and sampling techniques. In that capacity, **Simon Grove** did a two days ID course on the beetles and **Denis Rodgers** did two or three days on the Collembola. **David Hancock** did the Diptera, Roger Kitching did the Lepidoptera, **Nico Bluethgen** (German entomologist currently studying at the Canopy Crane) did the ants, and **Daichin Li** (former JCU postdoc, now at University of Singapore) did the arachnids.

Simon Grove gave the introductory paper, with **Prof. Nigel Stork** (in absentia), at the **John Laurence** farewell at ANIC last December entitled "An inordinate fondness for beetles". He also took the opportunity to spend the week tapping into the expertise of resident and visiting entomologists at ANIC to get names for many of the 500-odd species of beetles from his research in the Daintree lowlands. 35% down, 65% to go! Look forward to a summary of his research in a future issue!

Regarding his options post-PhD, Simon is on a student visa and a Commonwealth Scholarship. Once that expires (end of Sept) he will have to leave the country, unless there's an Australian employer willing to sponsor his residency application. That means someone who needs a job done but can't find an Australian citizen with the right qualifications or experience. Such work could include various combinations of entomology, forestry, conservation, training or research. Simon can send a CV to anyone who asks. It would truly be a shame to let a talented young entomologist such as Simon disappear out of our grasp, especially since we all voiced our concern at the Canberra meeting about the shortage of 'up and coming' young entomologists!

AQIS – Mareeba

Late April saw an extremely short visit from our Executive Director **Paul Hickey**, who was accompanying Federal AFFA minister **Warren Truss** (and others) to chat sessions with various tableland fruit and vegetable growers. The whistlestop visit included a quick sojourn to the new Bundaberg Sugar Mill near Dimbulah.

QDPI – Mareeba

Patrick Huber is currently looking for employment having submitted his thesis and awaiting comments from markers. He is presently working as Data Management Officer with the Queensland Department of Natural Resources on the Waterwatch program in northern Queensland. Patrick also had a taste of greater duties while taking over from his supervisor in an acting role for six weeks during February and April. This employment is casual for an undetermined length of time and Patrick would like to sink his teeth into something more entomological. So any offers!!

Kylie ANDERSON
Regional Councillor

Cyclone Steve - Bones, Fairy Skirts and Green Tree Ants.

We had been through it all many times before so calmly taped windows, prepared camping lights, pulled out batteries and filled tubs and buckets with water and .....

The dog knew. Now that the winds picked up it was time to bring the canines inside the house for protection. As I was explaining the situation to my boy Taz, I discovered a huge pile of ancient and smelly bones all piled up on his bed. In true labrador style he had been busy digging up his store from way down the paddock and now had his stockpile for the torrid times ahead - it was his first cyclone.

With power still on sewing tasks were resumed. I realised I had moved into "frenzy pace " with green, pink and apricot coloured fairy skirts all over the place and the poor sewing machine whirring at such a speed it was ready to jump off the table. After giggling at myself I was reminded that last cyclone it was the

mango chutney that copped a hammering on the portogas burner and the cyclone before that, I nearly wore the tips off the knitting needles - I guess we all pull in differing mechanisms in times of abnormality. I live 7km outside Kuranda and like many others, spent the evening huddled in the hallway with a chattering child, wet dogs, guinea pigs, torches and the little radio. Cake for dinner seemed pretty good. Next, the thunderous noise of ripping timber and guttering scared us all and I'm certain the boy labby quite forgot about his bones as he almost hit the timber roof beams. This was something new as we had never suffered structural damage before. A 50ft ironbark tree decided to demolish a pergola and remodel one house corner. As we always say in these situations, "It could have been a whole lot worse, and at least we were all safe". We noted the change in wind direction and sat it out. My daughter refused to move into her bed and slept what was left of the night, in the safest place - the hallway .

Being without power, running water and having the 'phone line out for 45 hrs isn't too much fun - the freezers stay closed and you just hope for the best. Next day - cleanup - chainsaws, friends, checking on neighbours, more cake and bickis, huge piles of timber, debris up walls, mats to dry out, Cairns Birdwings and sunbirds out and about , 2 gorgeous Phasmids sheltering on our windows and hundreds of green tree ants. Having been blown all over the yard, they too were busy cleaning up and repairing their homes.

Kerrie HUXHAM
NAQS Entomologist Mareeba

QUEENSLAND - SOUTH

UQ, Dept of Zoology and Entomology

Although Entomology has been decimated in recent cuts at the University of Queensland, you wouldn't think so given all the research activity going on. New faces and new grants are popping up everywhere.

Mike Furlong has arrived after completing his second post-doctoral study at the University of Maine, USA. Mike, who completed his PhD at Silwood Park, Ascot, UK, will spend three years in Australia working on the diamond backed moth with Myron Zalucki at DPI Gatton. Continuing the lepidopteran theme, Grains Research and Development Corporation has granted **G.C. Graham** $35, 000 for a study on " Population genetics of *Heliothis* migration and recruitment to support a regional management strategy." **Myron Zalucki** spent the second week of November in the USA where he was a consultant for the Agricultural Biotechnology Stewardship Working Group. This group met in Chicago to discuss the controversial report in *Nature* that pollen from BT cotton might adversely affect Monarch butterfly larvae. Myron also attended EPA and Fisheries and Wildlife meetings in Washington.

Moving from Lepidoptera to Diptera, **David Yeates** spent a week in Tasmania in a successful quest for rare therevid maggots. He later attended a Taxonomic Data Bases Working Group meeting in Raleigh, North Carolina. Together with Mike Irwin, David has received Environment Australia/ Australian Biological Resources Study funding for "Expeditions to Inform Systematic Research on Australian Stilletto Flies". David will also be working with **Mark Harvey** and **Mike Hodda** to create "Australia's Terrestrial Invertebrates - an Interactive Key" with funding from ABRS.

David Merritt also travelled to the U.S., to Cold Spring Harbor, New York, where he attended the 1999 symposium on the neurobiology of *Drosophila*, and presented a poster on work carried out by **Spela Schrader** (nee Pehani). Spela was in his lab as a recipient of an Australia-European Award Program scholarship and returned to Slovenia in July 1999 to enrol in the PhD program at the Institute of Biology, Slovenia. However, Spela returned to David's lab for more research on *Drosophila* neural development earlier this year, supported by a prestigious Travelling Fellowship Award from the journal *Development*.

The first committee meeting to organise the 5th International Congress of Dipterology met in March. The Conference will probably be in Brisbane 29 Sept-30 Oct 2002. More information will be available by the end of the year.

Entomology students have done themselves proud this year. PhD student **Claire Baker**, who is working with Dave Merritt, was awarded $2000 from *Australian Geographic* to sponsor an expedition to study glow worms. In addition to the cheque she received a request to shoot plenty of film because *Australian Geographic* is interested in publishing her story in the magazine. **David Logan**, a remote UQ student based at BSES Bundaberg, was awarded the degree of Doctor of Philosophy on the 29th February for his thesis"Biology of Canegrubs". **Jeff Skevington**, who is currently completing a PhD with David Yeates, was recently awarded an NSERC post doctoral fellowship to work on Aschiza phylogenetics in Ottawa, Canada (starting in Jan. 2001). **Shaun Winterton** , another Yeates student ,who has recently submitted his PhD thesis, will be doing a postdoc on the molecular and morphological phylogeny of Acroceridae in Brian Weigmann's lab (North Carolina, USA) funded by

the Schlinger foundation. **Andrew Davies** has started his PhD, looking at the ecology of *Trichogramma* spp. in cotton in the Ord River Irrigation Area, and will be stationed at the Frank Wise Institute in Kununurra for 8-9 months each year. Andrew holds a CRDC scholarship under Myron Zalucki and will be co-supervised by **Gary Fitt** at ACRI and **Geoff Strickland** at W.A. Agriculture. **Mark Wade**, a new PhD student who has been awarded a Cotton Research and Development Corporation Postgraduate Research Fellowship, has started his studies with Myron Zalucki.

Insects weren't the only arthropods in the limelight in the past few months. **Dave Walter** has been working hard to promote his favorite taxon, the Acari. Noteworthy acarological events include rather extensive media coverage of mites and Dave's "Mite Image Gallery" in: *The Sunday Mail*, *University News*; *Campus Review*; and "Mad about mites", *Science* 286: 1047. Check out Dave's spectacular scanning electron micrographs (and rather liberal use of PhotoShop) at http://www.uq.edu.au/entomology/mite/mitetxt.html. New mite-associated grants and projects include postdoctoral funding for research on major acarine pests of tropical agriculture (supported by the Cooperative Research Centre for Tropical Plant Protection), and an ABRS contract to construct LucID keys to soil-dwelling Mesostigmata and Prostigmata of Lamington National Park (together with **Heather Proctor**, Griffith University).

Chris LAMBKIN

Griffith University

Heather Proctor (Griffith University) is up to her elbows in mites awaiting identification. These include approximately 5000 water mites from the Queensland Department of Natural Resources, and 1000 mites plucked from the feathers of brush-turkeys (*Alectura lathami*). The first lot were collected during the Monitoring River Health program over the past six years. Despite their long immersion in ethanol, the mites are proving relatively easy to identify to genus. The feather mites were collected in a joint project with **Darryl Jones** (Griffith University) to determine whether geographic separation between brush-turkey populations is reflected in the composition of their mite and lice assemblages.

Continuing the acarine theme, together with **Dave Walter** (U. Q.) Heather is working on an ABRS contract to produce interactive keys to soil mites. The extremely rich acarofauna of Lamington National Park is providing most of the material for this project.

Laing Rahner has started an Honours project supervised by **Tony Clarke** and Heather Proctor examining natural causes of mortality of fruit flies (Tephritidae) during the pupal stage. His research suffered a brief set-back earlier this year when a container of pesticide was mysteriously evacuated near the air intake of the fruit-fly lab. Many thousands of flies perished. The diptericidal culprit has yet to be apprehended.

Aki Nakamura (Honours, supervised by **Carla Catterall** and **Heather Proctor**) is investigating the relationship between age of rainforest regrowth and the diversity of soil arthropods in subtropical rainforest north of Brisbane.

Heather PROCTOR

Alan Fletcher Research Station

Graham Donnelly has been inspecting mesquite biological control sites in northwest Queensland. The bruchid *Algarobius prosopis* is established at Hughenden and *Algarobius bottimeri* are established at McKinlay and Kynuna. Many mesquite plants at Hughenden, McKinlay and Kynuna were heavily attacked by the gelechiid leaf-tier *Evippe* sp. Evidence of survival of the psyllid *Prosopidopsylla flava* was found at Hughenden, McKinlay and Kynuna. The latter two insects were inspected for **Rieks van Klinken**, CSIRO Indooroopilly. Graham and Department of Natural Resources Land Protection Officer **Lyle Fleck** made a further *P. flava* release at Hughenden.

Graham DONNELLY

Army Malaria Institute

The monthly collections of mosquitoes at Shoalwater Bay Training area, north of Rockhampton, were completed in February 2000, around 60,000 mosquitoes being collected during this 2 year longitudinal study. The identification of mosquito species and placement into species batches of up to 25 mosquitoes per batch should be completed in the next few months. The task of identifying virus in mosquito batches is progressing slowly, and should keep **Sarah Russell** and **Kerryn Rowcliffe** busy in the future.

In March, **Bob Cooper** was part of an Australian delegation who spent a week in Vietnam discussing future collaborative efforts between the Australian and Vietnamese military to reduce the incidence of malaria in Vietnamese soldiers.

Visitors to the institute included Dr **Tom Burkot**, who is now working with the South Pacific Commission in Honiara, Dr **Nigel Beebe**, UTS, and **Andrew van**

den Hurk, UQ, who all discussed collaborative projects with **Bob Cooper**. Dr **Evan Schmidt**, Tropical Health Program, visited in March to borrow specimens of the *Anopheles punctulatus* group collected by **Bob Cooper** and his team in Papua New Guinea. In January, **Steve McCleod-Robertson** was posted to the institute, and as part of his duties will continue to analyse mosquitoes collected from PNG for the presence of malaria sporozoite proteins.

Stephen P. FRANCES

SOUTH AUSTRALIA

SOUTH AUSTRALIA

SEX - Systematics and Evolution eXchange discussion group

The aim of this newly formed group is to exchange ideas and information on systematics and evolution, with meetings being held in the Natural Sciences tearoom of the South Australian Museum. More than 25 people attended the first meeting in March where **Steve Donnellan** from the Evolutionary Biology Unit (EBU) spoke about SINEs. At the April meeting, **Andy Austin** outlined the various research programs in the Insect Systematics and Biodiversity Laboratory at the Waite Campus of the University of Adelaide.

Planning a gold heist?

You can always tell when it has been a good year for insects in the inland. Large numbers of *Calosoma schayeri* (Carabidae) suddenly increase in numbers to take advantage of numerous Lepidoptera larvae feeding on desert ephemerals. Bright lights from isolated townships attract adults from large distances. In 1984 they caused an industrial strike at Moomba gas plant in the north of South Australia where the workers objected to working knee-deep in beetles. In March 2000, large numbers of these predators were reported from Coober Pedy and Roxby Downs. At Roxby Downs, they have invaded the newly-constructed gold bullion room. SARDI entomologist **Peter Bailey** has volunteered to keep a watch on developments in the room, but has not so far succeeded in obtaining a key.

Something in the coffee?

The population of the Insect Systematics and Biodiversity Laboratory at the Waite Campus of the University of Adelaide has increased rapidly in the last few weeks. **Nicholas Stevens** and his partner **Trudi** announced the arrival of daughter Misha Anais on the 24th March, and 24 hours later, honours student **Travis Gotch** and his wife **Beck** announced the arrival of son Jake Mitchell. **Muhammad Iqbal** and wife **Mussy** are expecting a baby in October.

And now for something serious!

Andy Austin has found some new skills as a chook resuscitator! Daughter Tess's silky bantam was found apparently dead in its drinking bowl. Instead of just burying it, Andy decided to see if anything could be done for the bird. After a rub down and 20 minutes of warming with a hair drier it began to twitch. After about two hours the bird was walking around as though nothing had happened!! Because Tess couldn't bear to part with the bantam, it even went shopping with the Austins and was reportedly seen sitting in the local coffee shop eating donuts!!

IPM Course

The IPM course at The University of Adelaide has attracted a modest enrolment of eight new first-year students this year. Word of the degree is spreading and potential employers have been enthusiastic about the degree. The first four student interns completed their industry placements this past summer working on environmental weeds and pests of citrus, apples & strawberries, and cotton. This program was a big success in its first-year.

Mike Keller's Lab.

Vanessa Cavagnaro has commenced a study of the population dynamics of pest snails in southern Australia as the focus of her Ph.D. research under **Mike Keller** and **Geoff Baker** (CSIRO Entomology, Canberra). Three new honours students have joined Mike's lab. **Vanessa Bosco** is studying how feeding by parasitic wasps affects foraging for host insects using the braconid wasp *Cotesia rubecula* as a model organism. **Anna Traeger** is studying local movement of the horehound plume moth and is supported by a scholarship from the CRC for Weed Management Systems. **Elisa Kaesler** is studying how certain surfactants used in conjunction with insecticide sprays influence leaf chemistry and oviposition by the diamondback moth. **Esmerelda Dols** is working out of Mike Keller's lab in March and April while she collects *Asobara persimilis* from around Australia. She is a postgraduate student from Jacques van Alphen's lab at Leiden University in the Netherlands. Esmerelda is studying the evolution of life history in this species, which parasitises *Drosophila* species.

John JENNINGS
Regional Councillor

TASMANIA

University of Tasmania
School of Agricultural Science/CRC for

Sustainable Production Forestry

On the travel front in February **Helen Nahrung, Zoltan Lukacs, John Madden, Marina Hurley** and **Geoff Allen** all attended the insect-eucalypt interactions symposia held in Canberra in February, with all but John and Helen following on to attend the eucalypt pest management workshop. Official visitors have included **Sharon Strauss** (UC Davis) and **Andrew Loch** (CSIRO/CRC-SPF-Manjimup), who both gave talks, and a six person delegation of Chinese insect pathologists from Guandong Forest Research Institute. Others spied around the traps, though classified into that other frequent class of Tasmanian visitor (tourists), have included **Toni Withers** (NZ FRI) and **Susan Evans** (Qld Museum). **Brendan Murphy** (Uni Canterbury/ NZ FRI) finished his second season of Tasmanian research in March and returned to NZ with his 'cold- strain' of *Enoggera* wasps that he is now rearing in quarantine.

On the student front, **Michael Lang** has begun Honours with Geoff Allen on sheep blowfly and carrion, whilst **Luke Rapley** commenced his PhD in April with Geoff and **Brad Potts** (Plant Science) on genetic variation in susceptibility of eucalypts to insect attack. A further new PhD student, **Hilton Redgrove** will be starting in May investigating the ecology and impact of soil-dwelling scarabs *Heteronyx* spp. supervised by **Marina Hurley, Peter McQuillan** and **David de Little** (North Eucalypt Technologies). Congratulations to **Steve Candy** (Forestry Tasmania) who had his PhD on modelling an IPM system for leaf beetles recently passed with very favourable comments, and to **Bradley Howlett** for submitting his PhD in April. **John Madden**, now relieved of graduate students, has migrated north to the Sunshine Coast in Qld for the next 6 months. **Marina Hurley** has recently finished trials quantifying the short-term impact of leaf beetles on *Eucalyptus nitens* and **Geoff Allen** finished experiments on the impact of natural enemies on leaf beetles. **Helen Nahrung** has finished a successful field season monitoring populations of leaf beetles and **Anthony Rice** is sorting out the identity of the tachinid species in the leaf beetle parasitoid guild. **Owen Seeman** continues to screen and make collections of bumblebees from around the state for the ARC research project on bumblebee genetics and has also recently expanded into a project on mosquitoes.

Tasmanian Institute of Agricultural Research (TIAR)

John Ireson, **Richard Holloway** and **Wade Chatterton** continue to be busy on weed biocontrol programs, particularly for gorse and ragwort. The gorse spider mite has now been released on over 70 properties around the state. It is now very much in evidence at many of these, due to the amount of webbing produced. As a result, it is attracting plenty of interest from landholders and landcare groups who are eagerly getting involved in redistribution programs. Two types of predator, mite eating ladybirds, *Stethorus* spp. and the chilean predatory mite, *Phytoseiulus persimilis*, have been observed at some sites. The degree to which these predators will limit the impact of gorse spider mite in Tasmania, of course, remains to be seen. Rearing stocks of a new biological control agent for ragwort, the ragwort plume moth, *Platyptilia isodactyla* (via colleagues at Keith Turnbull Research Institute) arrived last December. Culturing has proceeded well and multiple releases have been carried out during summer and autumn. Further releases are planned in spring.

Tasmanian Museum and Art Gallery (TMAG)

In January **Kaye Hergstrom** took a trip around Tasmania to distribute public survey forms "Have you seen a bumblebee?" to national parks and east coast towns. The response has been excellent, and national parks and wildlife staff have been extremely helpful. **Roger Buttermore** has been refining his rearing techniques, writing reports, and designing rearing boxes to be placed out (empty of bees) in native bush areas to test whether bumblebees can permanently establish in native bush. Kaye has been looking for 30 sites where common heath, *Epacris impressa*, occurs to study seed set in the presence and absence of *Bombus terrestris*; monitoring their densities in urban, rural and native bush areas, collating survey data and collecting weed plants to study the relative pollination efficiency of bumblebees and honey bees. In her spare time, she's been battening down the hatches at home after the second burglary in 4 months. The convict spirit is alive and well in these southern climes! Fortunately life at the museum is not all napthalene, alcohol and stuffed thylacines. In March the Gyoto monks of Tibet chanted up a storm each morning for 10 days, and the Dinosaurs Alive! exhibit gave the place a "Jurassic park" feeling of excitement.

Department of Primary Industries, Water and Environment

Trevor Semmens has retired from New Town Laboratories. Database entries have almost halted until the ever-shrinking department rearranges itself. Replacement staff are unlikely for low profile, non-regulatory activities such as database

management. With **Margaret Williams** preoccupied in an acting management position all summer and autumn, **Lionel Hill** has had little time to address long-term issues like database software changes or internet links. Lionel has been assisting vegetable IPM agronomists **Julia French** and **Felicity Wardlaw** in the war against *Plutella*. Julia also works in organic projects and found that a rotating brush weeder controlled cutworm in organic carrots. **Jean Bentley** was contracted by DPIWE to conduct a very successful summer scouting program to demonstrate the value of egg monitoring for corn earworm in sweet corn.

Forestry Tasmania (FT)

The chrysomelids were out in force this summer with many eucalypt plantations needing protection. **Jane Elek** has been busy trying to estimate the damage done to eucalypts by adult in contrast to larval chrysomelids, and testing out some more environmentally friendy insecticides against chrysomelid and autumn gum moth larvae. She has also tried her hand at entomological design for 5 different ladybird overwintering houses to see if ladybirds can be enticed to overwinter in eucalypt plantations. **Dick Bashford's** Asian Gypsy Moth trapping program has been completed for another year without finding any moths. Dick's large tents are appearing in the Warra LTER site as six pairs of old-growth and re-growth trees have been felled. Tents are being placed on sections of the trees to monitor the sequence of insect attack over several years. The vespid wasp *Vespula vulgaris* has been found at Warra, and current surveys show that it is present in most eastern areas south of Hobart. Both **Brian Smith** (Molluscs) and **Lisa Boutin** (spiders) of Queen Victoria Museum, are very involved in Warra baseline studies. The drought in the midlands is so severe that wingless grasshoppers are devouring the radiata pine shelter belts. The only green foliage left! **Humphrey Elliot** represented the FT entomologists at the insect-eucalypt symposia and the eucalypt pest management workshop in Canberra, in between trips to China and hosting Chinese visitors to Australia.

Geoff R. ALLEN
Tasmanian Regional Councillor

VICTORIA

Institute of Sustainable Irrigated Agriculture, Tatura

As always, summer has been a very busy time for the Entomology Team. The Carpophilus beetle team lead by **Mofakhar Hossain** has been involved in a large scale fruit damage assessment this year, picking and checking over 60,000 fruit. The Carpophilus Beetle team has also been testing different strategies for using the Carpophilus pheromone. **Alex Il'Ichev** has been examining new technologies for mating disruption application for the OFM Project. **Cathy Mansfield** has also been working on an IPM in Fresh Market Tomatoes project based in the Goulburn Valley and visited **Brian Walker** (Crop Consultant in Leeton NSW). While in NSW, Cathy also visited **Adrian Nicholas** who is working on Carpophilus in Yanco. We have had a number of very interesting visitors over summer including **Prof. Arnold Gegechkori** (Georgia, formerly a part of USSR), **Dr. Mark Whalon** (USA), **Dr. Larry Gut** (USA) and **Associate Professor Robert Spooner-Hart** (University of Western Sydney). We look forward to further collaboration, including post-graduate research between ISIA and University of Western Sydney, Hawkesbury.

DeAnn GLENN
Regional Councillor

Entomological Society of Victoria

At the member's night in December 1999 **Kelvyn Dunn** showed a video he had taken of butterflies in Northern Thailand and **Ian Endersby** gave a short talk on adaptations that insects have made in alpine environments. Professor **Neil Archbold** addressed the February meeting on the fossil history of insects commenting particularly on aspects of evolution, gaps in the record, and major extinctions. Advice was given to the Friends of Braeside Park who want to carry out a butterfly survey in a south-eastern suburb of Melbourne and a listing in the yellow pages brings numerous questions to the Society, some of them relevant to local entomology.

Recent issues of the society's journal have reported butterfly observations from a wide range of localities: Victoria, Western Australia, New South Wales and Borneo, together with a cautionary note about accepting observation records without voucher specimens.

WESTERN AUSTRALIA

Curtin University of Technology

Two new PhD students have joined the Entomology Laboratory. **Melinda Moir** will be looking at the contribution of understorey plants to hemipteran diversity in rehabilitated bauxite mines and adjoining jarrah forest. **Aaron Gove** recently arrived from Adelaide and is planning to look at various

aspects of ant community composition in semi-decidous rain forest in Mexico. **Brian Heterick** recently drove to Canberra, where he compared vouchers from the Curtin ant collection with specimens in the ANIC. As a result, the Curtin collection has gained numerous additional names and has now reached 669 morphospecies. Western Australian researchers are encouraged to consult this collection when undertaking ant studies. **Jonathan Majer** received a visit from **Sharon Strauss** from University of California at Davis and toured nearby jarrah forest and wandoo woodland sites to look at arboreal invertebrate study sites. **Ann Noak** (University of Sydney) also visited to inspect accessions in the Curtin collection for representatives of cremastrine wasps.

CSIRO Entomology

Sharon Strauss also made a visit to the southwest, taking in blue gum plantations and native forests from 7-9 March; she even found a new insect pest species! **Andrew Loch** spent a week in Tasmania in early February meeting various CRC-SPF folk and observing plantation insect problems there. **John Matthiessen** and Andrew attended the Insect-Eucalypt Interactions Symposium during 7-8 Feb and the Plantation Pest Management Workshop 10-11 Feb. Andrew is currently establishing exclusion trials for leafblister sawfly and autumn gum moth that will quantify the effects of feeding by both species on blue gum growth. **Owain Edwards** visited Canberra at the end of February to attend seminars presented by **John LaSalle** (CABI, UK) on the Eulophidae and biological control.

Tim Woodburn hosted the 9th annual seminar for biological control of weeds in WA on April 11th. Attending were representatives from Agriculture Western Australia, CSIRO, CALM, and Murdoch University. Out of state attendees included **Louise Morin** (CSIRO, Canberra), **Rieks van Klinken** and **Mic Julien** (CSIRO, Brisbane), and **Petra M?ller** (CSIRO, South Africa). **Kathryn Batchelor** ran two workshops on bridal creeper leafhopper rearing techniques so that others around the state can assist in the spread of this promising biological control agent.

University of Western Australia

Leigh Simmons has been appointed Research Professor in the department of Zoology. Advertising has commenced to fill a 5-year lectureship position in the faculties of Agriculture and Science to study the use of insects in the biological control of agricultural and environmental weeds.

Owain EDWARDS
WA Regional Councillor

EMPLOYMENT IN ENTOMOLOGY

University of Western Australia

Faculties of Agriculture and Science.
Lecturer (Level B) in Entomology)
The Biological Control of Weeds

Applications are invited for the above 5 year, fixed term joint appointment between the Faculties of Agriculture and Science in the use of insects in the biological control of agricultural and environmental weeds. The Lecturer will be responsible jointly to the Director of Western Australian Herbicide Resistance Initiative and the Head of Department of Zoology. A key responsibility for the appointee will be to participate in the development of new units in pest management for undergraduate students in the Faculties of Agriculture and Science. There will also be the opportunity to contribute to other teaching programs, and to supervise undergraduate and postgraduate student research projects. The appointee will develop a research program relevant to the biological control of weeds in Australia, and will build on to the existing strong collaborative links between the University, Agriculture Western Australia and CSIRO in this area.

Applicants will be expected to have a PhD or equivalent in a field relevant to entomology. Preference will be given to applicants with strong skills in population genetics and/ or systems ecology, and with interests in either insect biology; insect - plant interactions or applied entomology. Experience in teaching in entomology or cognate discipline is also highly desirable. The submission of a teaching portfolio would be advantageous.

Further information may be obtained from Prof Win Bailey: Telephone + (08) 9380 2241; Fax + (08) 9380 1029; Email wbailey@cyllene.uwa.edu.au or Prof Steve Powles: Telephone + (08) 9380 7833; Fax + (08) 9380 7834; Email spowles@agric.uwa.edu.au

SALARY: Lecturer Level B $ 48,909 – $ 58,081.

The position will be kept open until filled, and applications will continue to be accepted after the closing date of 5 May, 2000. The University reserves the right to fill by invitation or to not fill the position in

response to this advertisement.
General information about UWA human resource policies can be found at http://www.uwa.edu.au/
Benefits include superannuation, fares to Perth (if applicable) for appointee and dependent family, removal allowance (if applicable), and long service leave. Conditions of appointment will be specified in any offer of appointment. Written applications should quote telephone/ fax numbers and email address; qualifications (including transcript of academic record) in postgraduate studies; curriculum vitae and experience. The names, addresses (including Email) and fax/telephone numbers of 3 referees should be sent to the Director, Human Resources, The University of Western Australia, Nedlands WA 6907 (fax 61 8 93801036).

Doctoral Scholarship in Disinfestation of Mediterranean Fruit-fly in Citrus
Curtin University of Technology and Agriculture Western Australia invite applications for a Doctoral Scholarship involving development of new approaches to disinfestation of Mediterranean fruit-fly in citrus.
It is anticipated that the project will lead to improved methods for disinfesting citrus, prior to it being exported to Japan, Korea, the USA and other countries. The project will be carried out at Agriculture W.A., in South Perth, under the direction of Dr Francis De Lima & Prof Jonathan Majer.
This Scholarship is open to Australian Citizens and *Permanent Residents and will be awarded for three years with an annual stipend of $19,318 per annum (tax free), a HECS Exemption Scholarship and a relocation allowance.
This prestigious Scholarship will be awarded on academic merit and relevance of the proposed research project. Applicants are expected to hold a relevant degree from a recognised University in the preferred fields of Biology, Agriculture, Environmental Science or equivalent, normally of at least Honours 11A standard or its equivalent.
*Permanent Residents must have resided in Australia on a continuous basis for 12 months prior to 31 May 2000.
Applications close 31 May 2000.
Interested applicants should contact Professor Jonathan Majer, School of Environmental Biology, Curtin University of Technology, GPO Box U1987, Perth WA 6845. Telephone (08) 9266 7041 or Email: imajerj@info.curtin.edu.au

COMING EVENTS

10TH INTERNATIONAL SYMPOSIUM ON TRICHOPTERA
Potsdam, Germany
July 30 - August 5, 2000

Details and application form can be obtained by writing to:
Dr Arturs Neboiss
Dept of Entomology
Museum of Victoria
71 Victoria Crescent
Abbotsford, Vic 3067

XXI International Congress of Entomology
Iguassu Falls, Brazil
20-26 August 2000
Entomologists Preserving Biodiversity
See - *Myrmecia* **34**(1): 30-31.
Please refer to (http://www.embrapa.br/ice)
Or contact: ice@sercomtel.com.br

Arbovirus Research in Australia-8
Mosquito Control Association of Australia-4
Conference
3-7 July 2000
Couran Cove Ecotourism Resort
South Stradbroke Island
Gold Coast, Queensland
Registration forms are available from:
Michael Brown
QIMR,
PO Royal Brisbane Hospital, Qld 4029
Phone: [07] 3362-0352
Email: **michaeBr@qimr.edu.au**.

THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.

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Dr D.E. Walter, AES Secretary, c/o Dept. of Entomology

University of Queensland, QLD 4072

We the undersigned

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(print name here) (signature)

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Interests, experience and publications in entomology for publication in the News Bulletin *Myrmecia* (please attach brief resumé):

I accept nomination and undertake if elected to abide by the rules of the Society and to pay annual subscriptions by the date prescribed.

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For **2000**, new student/retired members - $25.00; new full members - $55.00. **Payment with nomination required.** (NB. These rates only apply for new memberships.

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Printed by:
GOANNA PRINT
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Distributed by:
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